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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/909,140	07/18/2001	Avideh Zakhor	TruVideo 01	6872

7590 07/29/2004  
Franklin Schellenberg  
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EXAMINER

CZEKAJ, DAVID J

ART UNIT	PAPER NUMBER
2613	6

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/909,140

Applicant(s)

ZAKHOR ET AL.

Examiner

Dave Czekaj

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-10-12-14, 17-22, 25-30 and 33-35 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 15, 16, 23, 24, 31 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:

On page 7, line 10, the examiner notes that the "pattern library 81" shown in figure 1 is the "pattern dictionary 81".

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 7-8, 10-14, 17-18, 20-22, 25-26, 28-30, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zakhor et al. (5699121), (hereinafter referred to as "Zakhor") in view of Hartung (5457495).

Regarding claims 1, 10, 12, 20, and 28, Zakhor discloses an apparatus that relates to the processing of low bit rate signals (Zakhor: column 1, lines 13-16). This apparatus comprises "designating an initial reference dictionary of functions" (Zakhor: figure 1, column 4, lines 59-67, wherein the dictionary is the pattern library, the functions are the signal patterns), "designating a set of video sequences to be used as training sequences" (Zakhor: column 4, lines 1-18, wherein the training sequences are the reference frame signals), "calculating the motion residual image for at least one of the frames from the set of the video

sequences" (Zakhor: column 4, lines 31-36), "determining an energy threshold for evaluating the residual image" (Zakhor: column 5, lines 9-23, wherein the threshold has been previously applied to only use the high energy portions), "evaluating the residual image for portions above the threshold" (Zakhor: column 5, lines 9-23, wherein the portions above the threshold are the high energy portions), "comparing a first high energy portion of the residual image to at least one function in the reference dictionary" (Zakhor: column 5, lines 47-54, wherein the high energy portion is compared to patterns or functions in the library or dictionary), "extracting the first high energy portion of the residual image" (Zakhor: column 5, lines 9-23, wherein the high energy portion is extracted from the image) and "storing the extracted high energy portion of the residual image" (Zakhor: column 6, lines 38-44, wherein the buffer is the storage medium). However, this apparatus lacks synthesizing the dictionary from the high-energy portions as claimed. Hartung teaches that adaptive codebooks change over time in an attempt to provide a better match to the local statistics of the signal (Hartung: column 2, lines 35-44. The examiner notes that synthesizing a dictionary and having an adaptive codebook both describe the function of updating the codebook or dictionary). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus by Zakhor and add the adaptive codebook taught by Hartung in order to obtain an apparatus that provides a better match signal.

Regarding claim 2, Zakhor discloses "the initial reference dictionary is a Gabor set" (Zakhor: column 7, lines 43-45, wherein the Gabor set is the Gabor functions).

Regarding claims 3, 13, 21, and 29, Zakhor discloses "the step of comparing comprises an inner product calculation" (Zakhor: column 5 lines 65-67 – column 6, lines 1-2, column 8, lines 1-4).

Regarding claims 4, 14, 22, and 30, Zakhor discloses "revising the residual image and repeating steps for a second portion of the residual image" (Zakhor: column 6, lines 38-45, wherein the process is repeated for the next frame).

Regarding claims 7, 17, 25, and 33, Zakhor discloses "the initial reference dictionary and extracted portions of image are rectangular" (Zakhor: column 4, lines 59-67, column 11, lines 10-12, wherein the matrix can represent the shape of a rectangle).

Regarding claims 8, 18, 26, and 34, Hartung discloses "the modified set of dictionary images are rectangular images with a plurality of dimensions" (Hartung: column 6, lines 54-67, wherein the modified dictionary is the modified or updated codebook, the rectangular images are the blocks, the plurality of dimensions is the varying amount of error in the blocks).

Regarding claim 11, Zakhor discloses "the partition size threshold function decreases for successive iterations" (Zakhor: column 5, lines 9-23, wherein the threshold has been previously applied to only use the high energy portions or

partitions. The examiner notes that upon another iteration, since the first set of high energy samples have been previously extracted, a new threshold will be determined for a second set of high-energy thresholds. Since this is the second set of high energy samples, the second set will not have as much energy as the first set and thus have a lower or decreased threshold function).

4. Claims 9, 19, 27, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zakhor et al. (5699121), (hereinafter referred to as "Zakhor") in view of Hartung (5457495) in further view of Choy et al. (6754624), (hereinafter referred to as "Choy").

Regarding claims 9, 19, 27, and 35, note the examiners rejection for claim 1, and in addition, claims 9, 19, 27, and 35 differ from claim 1 in that claims 9, 19, 27, and 35 further require a pruning a set of functions based on a usage histogram. Choy teaches that reordering or pruning a codebook or dictionary can help prevent undesirable results (Choy: column 7, lines 36-51). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus by Zakhor, add the adaptive codebook taught by Hartung, and add the histogram taught by Choy in order to obtain an apparatus that provides a better/desirable match signal.

***Allowable Subject Matter***

5. Claims 5-6, 15-16, 23-24, and 31-32 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US-5444488      08-1995      Goubault et al.


US-2001/0028683    10-2001      Bottreau et al.

US-5255342      10-1993      Nitta, Tsuneo

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dave Czekaj whose telephone number is (703) 305-3418. The examiner can normally be reached on Monday - Friday 9 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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